National Pollutant Discharge Elimination System

FACT SHEET for

BP Products North America Inc.

September 25, 2013

Indiana Department of Environmental Management

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www.idem.IN.gov

Permittee:	BP Products North America Inc. Whiting Refinery 2815 Indianapolis, Blvd. Whiting, Indiana
Existing Permit Information:	Permit Number: IN0000108 Expiration Date: 7/31/2012
Source Contact:	Ms. Rose Herrera 219/473-3393
Source Location:	BP Products North America Inc. Whiting Refinery 2815 Indianapolis, Blvd. Whiting, Indiana 46394 Lake County
Receiving Waters:	Lake Michigan and the Lake George Branch of the Indiana Harbor Ship Canal
Proposed Action:	Renew of the NPDES Permit that expired on July 31, 2012 Date Application Received: February 6, 2012
Source Category	NPDES Major – Industrial
Permit Writer:	Mr. Steve Roush 317/233-5747 or sroush@idem.in.gov

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1.0 INTRODUCTION

The Indiana Department of Environmental Management (IDEM) received a National Pollutant Discharge Elimination System (NPDES) Permit application from BP Products North America, Whiting Business Unit on February 6, 2012 to renew their NPDES permit No. IN0000108. This permit regulates the discharge of process wastewater, storm water and non-contact cooling water from Outfalls 002 and 005 at the Whiting, Indiana facility to Lake Michigan and the discharge of storm water through Outfalls 003 and 004 into the Lake George Branch of the Indiana Harbor Ship Canal.

A five (5) year permit is proposed in accordance with 327 IAC 5-2-6(a).

In accordance with Title 40 of the Code of Federal Regulations (CFR) Sections 124.8 and 124.6, as well is Indiana Administrative Code (IAC) 327 Section 5, development of a Fact Sheet is required for NPDES permits. This document fulfills the requirements established in those regulations.

This Fact Sheet was prepared to document the factors considered in the development of NPDES Permit effluent limitations. The technical basis for the Fact Sheet may consist of evaluations of promulgated effluent guidelines, existing effluent quality, receiving water conditions, and wasteload allocations to meet Indiana Water Quality Standards. Decisions to award variances to Water Quality Standards or promulgated effluent guidelines are justified in the Fact Sheet where necessary.

2.0 FACILITY DESCRIPTION

2.1 General

BP Products North America Inc. owns and operates a petroleum refinery located on approximately 1,400 acres within the boundaries of Whiting, East Chicago, and Hammond, Indiana, near the southern tip of Lake Michigan. The refinery employs approximately 1,850 people and produces a variety of petroleum products, including gasoline of all grades, diesel fuel, heating fuel, jet fuel, asphalt, and petroleum coke. The refinery also produces petroleum intermediates.

BP Whiting discharges three types of wastewater: treated effluent; once-through non-contact cooling water; and storm water. First, the refinery discharges, as a long-term average, 15.7 million gallons per day (MGD) of treated effluent through Outfall 005 into Lake Michigan. The maximum monthly average is 19.9 MGD. The treated effluent originates from water used in or received by the plant, recovered groundwater, and most of the storm water from the site, all of which is treated in the refinery's wastewater treatment plant (WWTP) and discharged via a high rate multiport diffuser. Second, the refinery discharges, as a long-term average, 73.7 MGD of once-through non-contact cooling water through Outfall 002, also into Lake Michigan. Third, the refinery intermittently discharges the balance of its storm water through Outfalls 003 and 004 into the Lake George Branch of the Indiana Harbor Ship Canal.

During the term of the renewed permit, BP will continue the Whiting Refinery Modernization Project (WRMP), known (in part) in the existing permit as the Canadian Extra Heavy Crude Oil

(CXHO) project. Construction is currently underway and is anticipated for completion around the end of 2013.

OTHER PERMIT RENEWAL ITEMS

1. On August 23, 2007, BP Whiting committed to operating the Whiting refinery in compliance with the TSS and ammonia limitations contained in its 1990 NPDES permit, notwithstanding the revised limitations contained in the current permit, which were properly calculated under the effluent limitations guidelines set forth in 40 CFR 419.22(a), 419.23(a), and 419.24(a), and approved by IDEM in accordance with applicable antidegradation requirements. BP since has invested millions of dollars toward continued research and engineering to further reduce the levels of pollutants discharged from the facility, and remains committed to keeping TSS and ammonia loadings at or below the 1990 authorized levels. As a result, BP requests that IDEM revise the current TSS and ammonia loading limitations to reflect the values established in the 1990 permit.

2. BP Whiting requests the continuation of the Clean Water Act Section 316(a) variance as documented in Part III.A of the existing permit. Phase I of the Thermal Plume Study was completed on March 4, 2011. The Phase II Thermal Variance Study Plan was approved by IDEM July 8, 2011. IDEM received the application from BP on July 24, 2012 for renewal of the existing alternate thermal effluent limits.

3. BP Whiting requests that the zebra mussel control program in place be continued. This program has been revised to incorporate year-round chlorination to control Zebra as well as Quagga mussels as described in the supplemental information at the end of this application.

4. BP Whiting requests the continuation of the alternate mixing zone for the Outfall 005 high rate multiport diffuser, including the application of a 37.1:1 mixing ratio for water quality based effluent limit (WQBEL) development. Per part I.H.1 of the existing permit, BP submitted the diffuser operation and maintenance plan to IDEM (current revision = 8/22/2011).

5. BP requests continuation of the 316(b) study approval given in Part III.B and Part I.F.4 of the existing permit.

6. BP requests that IDEM update descriptions to account for existing sources of offsite wastewater. Examples are Praxair, Ineos, and Griffith LPG Cavern storage dewatering. In addition, all on-site remediation groundwater is sent to the wastewater treatment facility. Further, consistent with 40 CFR 437.1 (b)(2)(b), offsite facilities (both BP and non-BP owned) such as pipelines and terminals may produce other wastewater from activities including tank inspections, hydro testing of equipment, dewatering operations, equipment clean out from maintenance and turnaround activities, dewatering of equipment, and other wastewater, which may be sent to the BP wastewater treatment plant for oil recovery and wastewater treatment.

7. BP does not manufacture pesticides on site. However, pesticides are occasionally applied to refinery areas by a qualified contractor in accordance with FIFRA regulations. Outfall 005 effluent sampling resulted in no detections of pesticide constituents required in USEPA Form 2C.

8. BP requests the continued application of a Streamlined Mercury Variance (SMV) in the renewed permit in accordance with the SMV application submitted to IDEM on 11/20/2010. The

resulting draft permit modification to incorporate a SMV went to public notice on Nov 14, 2011. An update of the SMV effluent mercury database is provided in Table ES-1 of this application. These data are presented in lieu of mercury results reported in Form 2C Section V.C for Outfall 005.

9. BP is currently engaged in a 5-year compliance schedule for vanadium effluent limitations at Outfall 005 per Part I.E.2 of the existing permit. For the renewed permit, BP requests that IDEM incorporate the most recent available updated vanadium data to revise Tier II water quality criteria.

10. BP requests the biological survey frequency given in Part I.H.2 of the existing permit be reduced from annually to the first, third, and fifth year of the renewed permit. The frequency may be increased if findings suggest significant changes in monitored biological/chemical characteristics. Annual biological surveys were conducted under the terms of the existing permit in July 2009 (pre-diffuser), August 2010 (post-diffuser), and July 2011. The data have shown that there have been no significant changes (relative to historic lake conditions) to the biotic community from year to year. The reduced monitoring frequency will be sufficient to identify trends in biological community structure and composition in future years.

11. BP requests that Outfall 005 sampling type for sulfide be revised to "grab" instead of the current "composite" requirement, such that preservation of the sample can be done in accordance with 40 CFR 136 Table E.

12. BP requests clarification on the definition of the monitoring frequency of "weekly" in Part I.A for the renewed permit. BP requests this interpretation be a working week of 7 days for Outfalls 005/002. For Outfalls 003/004 BP defines Monday through Sunday as the work week and Monday as the first day of the week.

13. BP requests that, in the renewed permit, IDEM change the language in the Outfall 003 and Outfall 004 descriptions from "non-process stormwater" to "stormwater associated with industrial activity"; from the J&L, Lake George, and tank dike, areas of 'the refinery to maintain consistency with 40 CFR 122.26(b)(14);definition.

14. BP requests that: the description of authorized wastewater -sources to Outfall 005- be revised to acknowledge that the WWTP receives and-treats-wastewater from normal refinery operations including maintenance, turnaround activities, excavation, dewatering, construction activities, tank cleaning, and temporary flows from upsets or downtime. Such temporary flows would include, as necessary, the retreatment ofoff-spec WWTP effluent that has been temporarily stored in alternate storage locations via the firewater recycle system rather than discharged to Lake Michigan. The temporarily stored off-spec WWTP effluent would then be rerouted back through the WWTP for additional treatment and final discharge. In addition, it should be noted that the process sewers are part of the wastewater collection system. BP also treats a substantial amount of stormwater associated with industrial activity through this system.

BP Products North America, LLC is classified under Standard Industrial Classification (SIC) Code 2911 Petroleum Refinery. The facility manufactures a variety of petroleum products, including gasoline of all grades, diesel fuel, heating fuel, jet fuel, asphalt, and petroleum coke. The refinery also produces petroleum intermediates.

A map showing the location of Outfalls 002 and 005 has been included as Figure 1.

Figure 1: Wastewater Treatment Facility Location

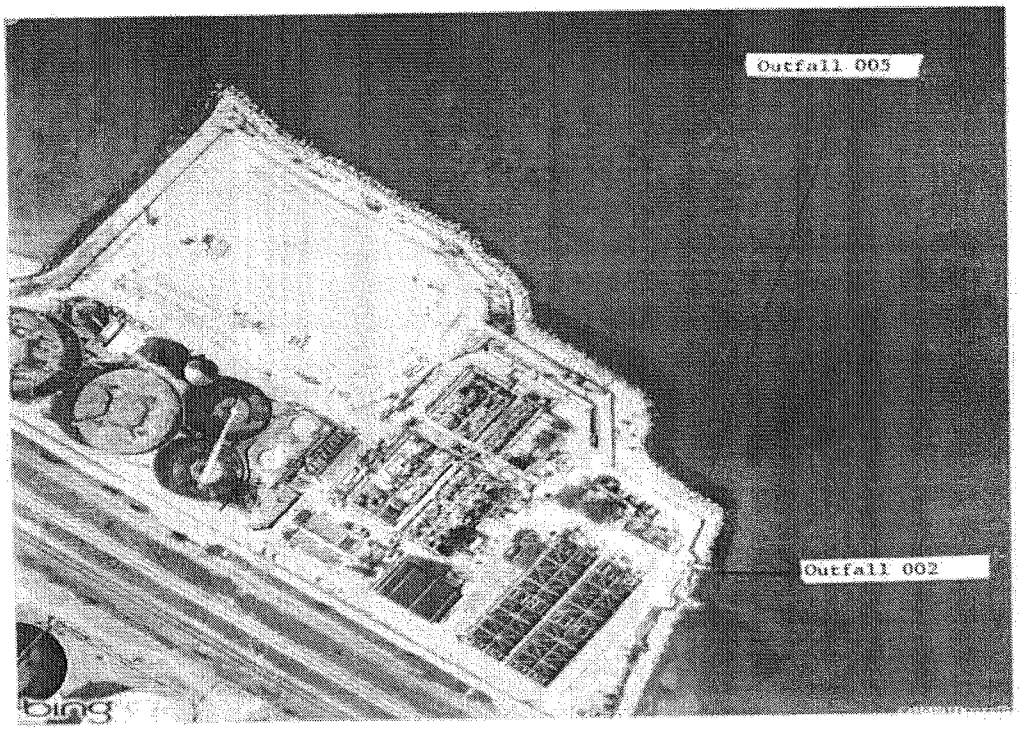
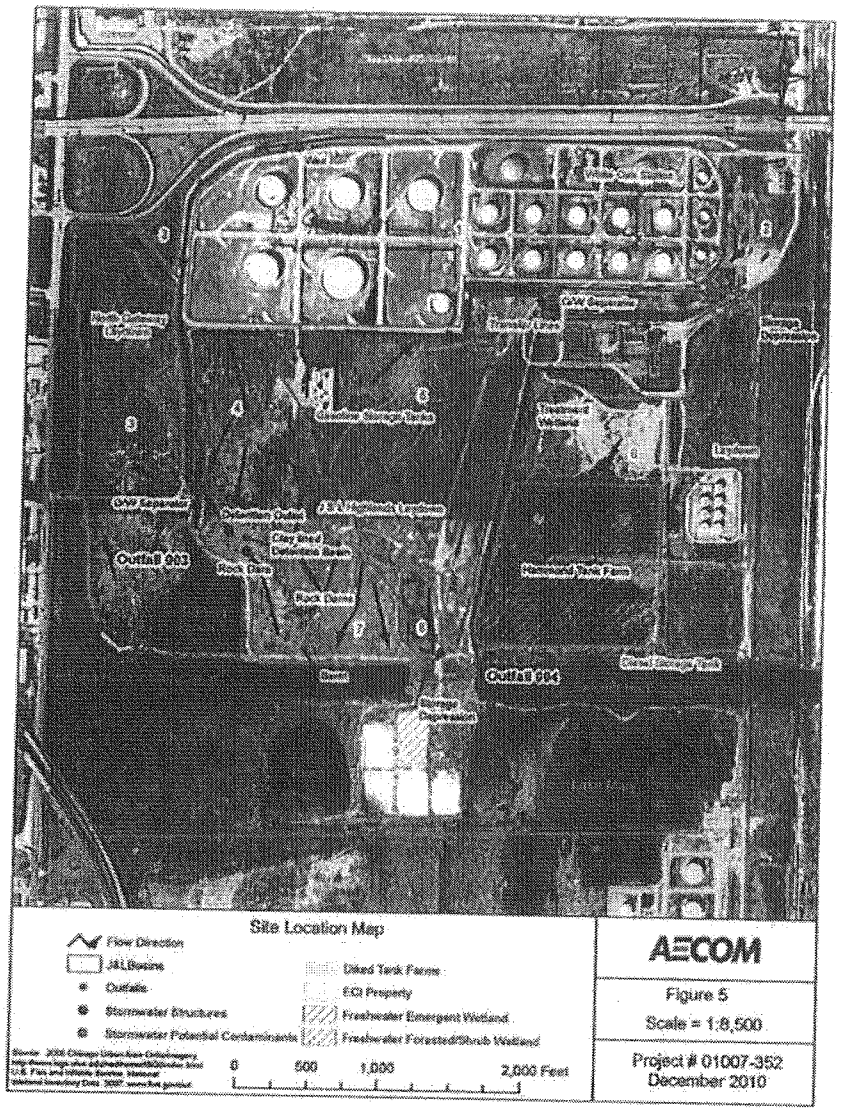


Figure 2: Storm Water Associated with Industrial Activity (Outfalls 003 and 004)

CHMENT 9A J & L Storm Water Map



Current Discharge to Outfalls 003 and 004 - J&L and Lake George Area

This section describes the area currently contributing to Outfalls 003 and 004, referred to as the J&L and Lake George Area.

The J&L and Lake George Area is located almost entirely in the city of Hammond, with a small portion in the northwest corner located in East Chicago, Indiana. The property is bordered on the north by 129th Street, the Indiana Harbor Ship Canal (south), Calumet Avenue (west), and B&O Railroad right of way (east). Contributing drainage areas include the Lake George Tank Field (59.0 acres), the rest of Lake George outside the tank field (66.6 acres), the J&L Tank Field (90.9 acres), and the rest of J&L outside the tank field (230.8 acres). Whiting Business Unit document E2001 is the Whiting Industrial Storm Water Pollution Prevention Plan (SWPPP) applicable to the J&L Area. The SWPPP identifies potential sources of pollution, describes practices and measures for reducing pollution potential, and assures compliance with the permit.

Land Cover

Approximately 15% of the J&L and Lake George Area consist of impervious refinery structures such as piping and tanks, trailers, and roadways. Natural vegetation occurs in a large section of the J&L and Lake George Area and intermittent landscaped vegetation exists around streets and some buildings. As a result, most of the drainage area routed to Outfalls 003 and 004 is vegetated.

Stormwater Drainage and Outfall Descriptions

Stormwater in the J&L Tank Field can be retained in tank dikes for infiltration and evaporation, or removed via vacuum trucks or manual pumping to the refinery process sewer system if an oil sheen is present. If the stormwater has no visible oil sheen, it can be routed to Outfalls 003 or 004 either manually by vacuum trucks or by a pumping system. Stormwater outside of the tank dikes is either collected in low lying areas for infiltration, or overflows to the west ditch and into the Turning Basin through Outfall 003, or overflows to the East Ditch to the Indiana Harbor Ship Canal through Outfall 004. Outfalls 003 and 004 are fed by vegetated drainage ditches controlled by sluice gates. Additionally, a limited amount of stormwater enters directly into the Indiana Harbor Ship Canal from the south end of the highlands (high ground south of J&L tank fields) during heavy runoff events as overland sheet flow. On the west side of J&L Tank Field, a small amount of runoff enters the Calumet Avenue Drain which drains to the Indiana Harbor Ship Canal.

Stormwater Control Features

Outfalls 003 and 004 currently discharge stormwater runoff from the southwest quadrant of the refinery. The area identified as West Ditch Drainage Area discharges stormwater through Outfall 003 to the Indiana Harbor Ship Canal to the south. The area identified as East Ditch Drainage Basin discharges stormwater through Outfall 004 to the Indiana Harbor Ship Canal. The West Ditch (to Outfall 003) and the East Ditch (to Outfall 004) are oriented from north to south on either side of the J&L Site.

Stormwater from Lake George Tank Field discharges via an underground pipe beneath Cline Avenue to the East Ditch and Outfall 003. Outfalls 003 and 004 are controlled by manually operated sluice gates. These outfalls are inspected daily for any water quality concerns. The sluice gates are opened once per week (usually Monday morning) only after inspection and verification that the discharge is within compliance limits.

Industrial Activities

The northern section of J&L and Lake George Area is a crude oil tank field, whereas the southern section is a multiuse area that is fairly undeveloped and used for material laydown and storage. Lake George Tank Field also contains paved areas for trailers and parking and includes routing of stormwater from the Calumet Avenue warehouse area.

The West Ditch Drainage Basin (Outfall 003) is covered by medium vegetation. This area also contains over 6,400 linear feet of roadway (paved). The J&L Tank Field consists of product storage areas bound on the north by a public roadway, on the east by railroad property, on the south by the Lake George Branch of the Indiana Harbor Ship Canal, and on the west by a public roadway. All tank dikes are typically void of vegetation cover. Vehicle access through and around the areas is via a series of asphalt paved and gravel roads situated on top of the dike walls. The west half of the J&L Tank Field contains 6 large tanks used primarily for the bulk storage of crude oil. Each tank has secondary containment in the form of tank dike. A channel, which originates north of the J&L Tank Field, and runs about 6,180 feet, is approximately 6 feet wide at the bottom and averages approximately 5 feet in depth. There are two flow control gates for regulating stormwater flows. The control measures for this basin include sediment rock check dams, detention basins, diversion channels, control gates, and sediment control structures throughout the area.

The East Ditch Drainage Basin (Outfall 004) is covered by medium vegetation with approximately 1.5 acres covered with heavy vegetation. There are approximately 8,600 linear feet of roads in this drainage basin segment. This area also includes the abandoned Liquid Petroleum Gas (LPG) loading racks and the associated remnant or abandoned rail car access, and lay down areas. A series of drainage channels approximately 3,950 feet in length collect runoff and route it to the East Ditch. Soil erosion controls consist of a detention pond, sediment traps, and slope roughening and diversion dikes.

Stormwater Run-on

Stormwater run-on to the J&L Tank Field occurs from Calumet Avenue and from the B&O Railroad. Calumet Avenue runs the entire western length and its associated drainage ditch connects the Indiana Harbor Ship Canal with Lake George to the north. The J&L Tank Field receives water from Calumet Avenue pavement, 126th Street ditch, Cline Avenue ditches, and properties north of 129th Street including the Lost Marsh Golf Course. This stormwater flows through the Calumet Avenue ditch on the west side of the property and drains directly to the Indiana Harbor Ship Canal. This run-on will not mix with stormwater from industrial activity because there is no hydraulic connection. At the northeast corner of the property, some stormwater enters the J&L property from the B&O Railroad. However, this run-on is minimal and stays without leaving the property.

Non-Stormwater Discharges

Non-stormwater discharges within the J&L and Lake George Area to Outfalls 003 and 004 may include the following:

- Fire Training or system flushing;
- Potable water sources including water line flushing;
- Uncontaminated ground water;
- Routine exterior building wash down that does not use detergents or other compounds;
- Pavement wash waters where spills or leaks of toxic or hazardous material have not occurred and where detergents are not used;
- Air conditioning condensates; and
- Equipment hydro-testing using fire water.

Specific fire training activities include health, safety, security, and environment (HSSE) training and fire brigade training at the J&L training area, and fire hydrant flushing. HSSE training occurs from June to October, four days per week, with a flow rate of approximately 125 gallons per minute (GPM). Fire brigade training sessions occur once in May, June, and July and use approximately 60,000 gallons per session. This water is retained by natural depressions, infiltrates to ground water, or a small amount drains to a sump pump east of Tank 3915 where it goes to the refinery process sewer.

Additionally, this area is under a forced agreement remediation project with Indiana Department of Environmental Management (IDEM) where multiple well point systems are in operation for ground water remediation. As contaminants are pumped out of the ground there is possibility for some stormwater contamination from condensation or equipment rain wash-off.

Management of Stormwater Under Agreed Order

In 1995, Amoco Oil Company Whiting Refinery voluntarily entered into an agreed order, Cause Number H-11187, with the IDEM. This order was for the mutual purpose of mitigating any threat to human health and the environment, to perform a Resource Conservation and Recovery Act (RCRA) Facility Investigation, and perform a Corrective Measures study to identify and evaluate alternatives for the corrective action necessary to prevent or mitigate any migration of releases of hazardous waste. This order includes a work plan for the J&L site. This work plan identified 27 pits that were generally cleaned up in 1977 and interim measures were put in place to prevent and abate off-site migration of contaminants. It is currently proposed to remove the requirements of this Agreed order for the J&L site and maintain stormwater compliance under the NPDES permit Industrial SWPPP for this area.

2.2 Outfall Locations

OUTFALL 002	Latitude:	41° 40' 36"
	Longitude:	87° 28' 16"
OUTFALL 003	Latitude:	41° 38' 59"
	Longitude:	87° 30' 17"
OUTFALL 004	Latitude:	41° 38' 48"
	Longitude:	87° 29' 51"
OUTFALL 005	Latitude:	41° 41' 03"
	Longitude:	87° 28' 05"

2.3 Wastewater Treatment

Outfall 005

The WWTP that discharges through Outfall 005 receives and treats wastewater from normal refinery operations including maintenance, turnaround activities, excavation, dewatering, construction activities, tank cleaning, and temporary flows from upsets or downtime. Such temporary flows include, as necessary, the retreatment of off-spec WWTP effluent that has been temporarily stored in alternate storage locations via the firewater recycle system rather than discharged to Lake Michigan. The temporarily stored off-spec WWTP effluent would then be rerouted back through the WWTP for additional treatment and final discharge. In addition, it should be noted that the process sewers are part of the wastewater collection system.

Over the past five years, BP Whiting has discharged a long term average of 15.7 million gallons per day (MGD) and a maximum monthly average of 19.9 MGD of treated process wastewater from water used in the refinery, recovered ground water and most of the storm water from the site through their wastewater treatment plant through the diffuser located in Lake Michigan to Outfall 005. The wastewater treatment plant is an advanced biological treatment system which occupies twenty acres and includes a oil/water separators, dissolved air flotation, an activated sludge plant, clarifier and final filtering processes. BP also accepts and treats wastewater at the wastewater treatment plant from Ineos PIB Unit (formerly BP Chemical Plant). All on-site remediation ground water is sent to the wastewater treatment plant. Off site BP Facilities such as pipelines and terminals may produce wastewater from tank inspections, from hydro testing of equipment, from dewatering operations of equipment for maintenance, or other wastewater produced from normal operations. The BP Products Refinery facility will treat this wastewater and recover any hydrocarbons as needed. A significant portion of industrial activity storm water is directed through the treatment system. BP has incorporated equilzation basins to capture storm water associated with industrial activity and then directs this water through the treatment plant prior to discharge through Outfall 005.

Whiting Clean Energy

Whiting Clean Energy supplies BP with steam and electricity. The closed cycle cooling towers operated by Whiting Clean Energy have a blowdown that has now been permitted to discharge to the City of Whiting and not to BP.

Ineos

As of 2012 the Ineos plant permanently shutdown, and only stormwater drains directly to the BP WWTP. Praxair, Ineos, and Griffith LPG Cavern storage dewatering, all are sending similar wastewaters to BP to be treated and since these are similar to the wastewaters BP treats they are not subject to the CWT regulations. In addition, all on site remediation groundwater is sent to the wastewater treatment facility. Further, consistent with 40 CFR 437.1 (b)(2)(b), offsite facilities (both BP and non-BP owned) such as pipelines and terminals may produce other wastewater from activities including tank inspections, hydro testing of equipment, dewatering operations, equipment clean out from maintenance and turnaround activities, dewatering of equipment, and other wastewater, which may be sent to the BP wastewater treatment plant for oil recovery and wastewater treatment.

A review of data submitted for the Praxair condensate water indicated BTEX compounds which are compatible with the wastes BP treats. 40 CFR 437.1(b)(2)(b) states that "demonstrates that the off-site wastes are of similar nature and the treatment of such wastes are compatible with the treatment of non-CWT wastes generated and treated" .

Outfall 002

Over the past five years, BP Whiting has discharged a long term average of 73.7 MGD and a maximum monthly average of 86.2 MGD of non-contact cooling water to Outfall 002. The flow values for Outfall 002 were submitted by BP in the February, 2012 NPDES Permit Renewal Application Update.

Outfalls 003 and 004

BP Whiting discharges storm water associated with industrial activity from an area on the South side of the BP Whiting property through Outfalls 003 and 004 using a manually controlled valve. When the level of water in the ditch is high, the water is released to the canal. The storm water is managed through the use of a Spill Prevention, Control and Countermeasure Plan, a storm water pollution prevention plan, a Facility Response Plan, and Agreed Order No. H-11187 which defined eight interim measures to be implemented at the J & L site in which Outfalls 003 and 004 are located.

Figure 3: Refinery Flow Diagram

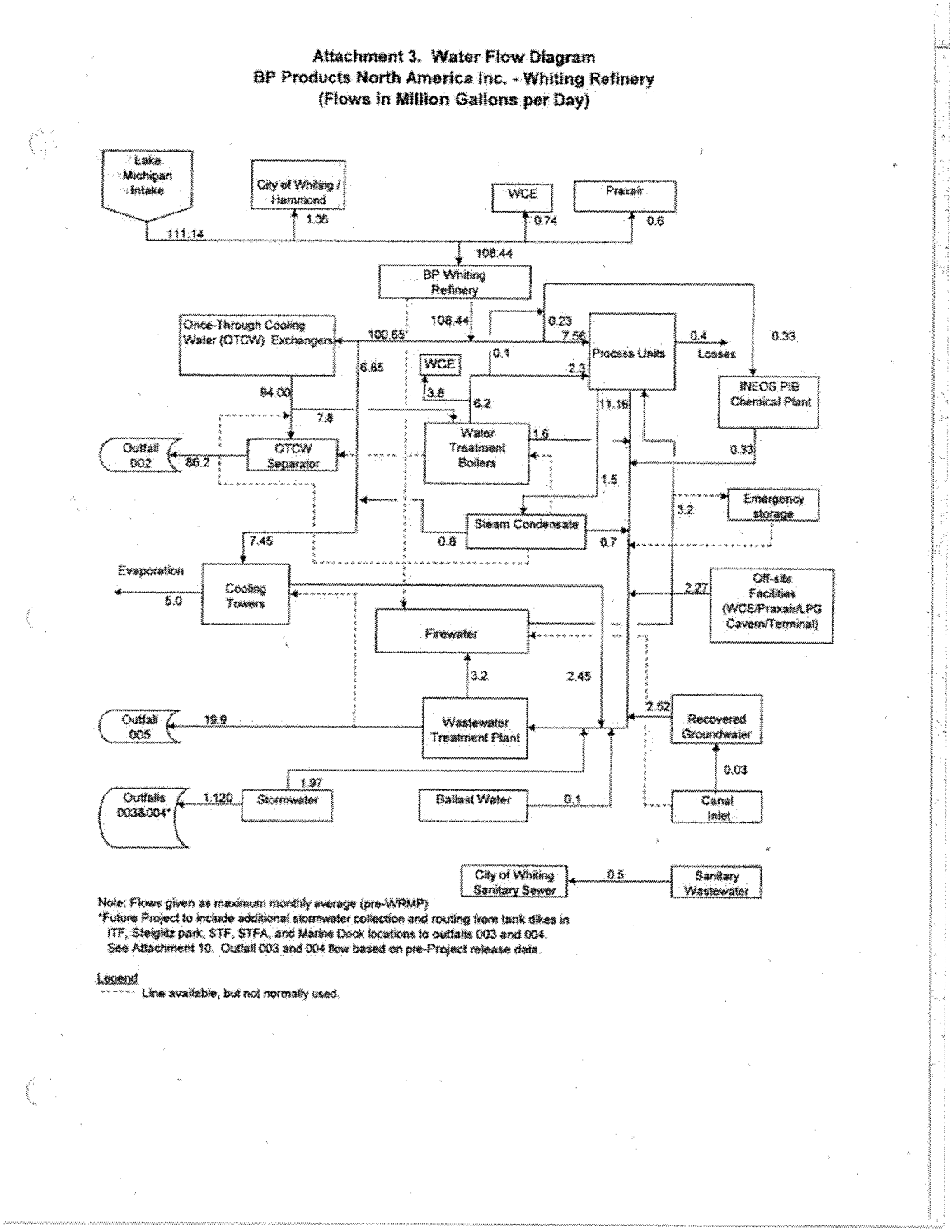
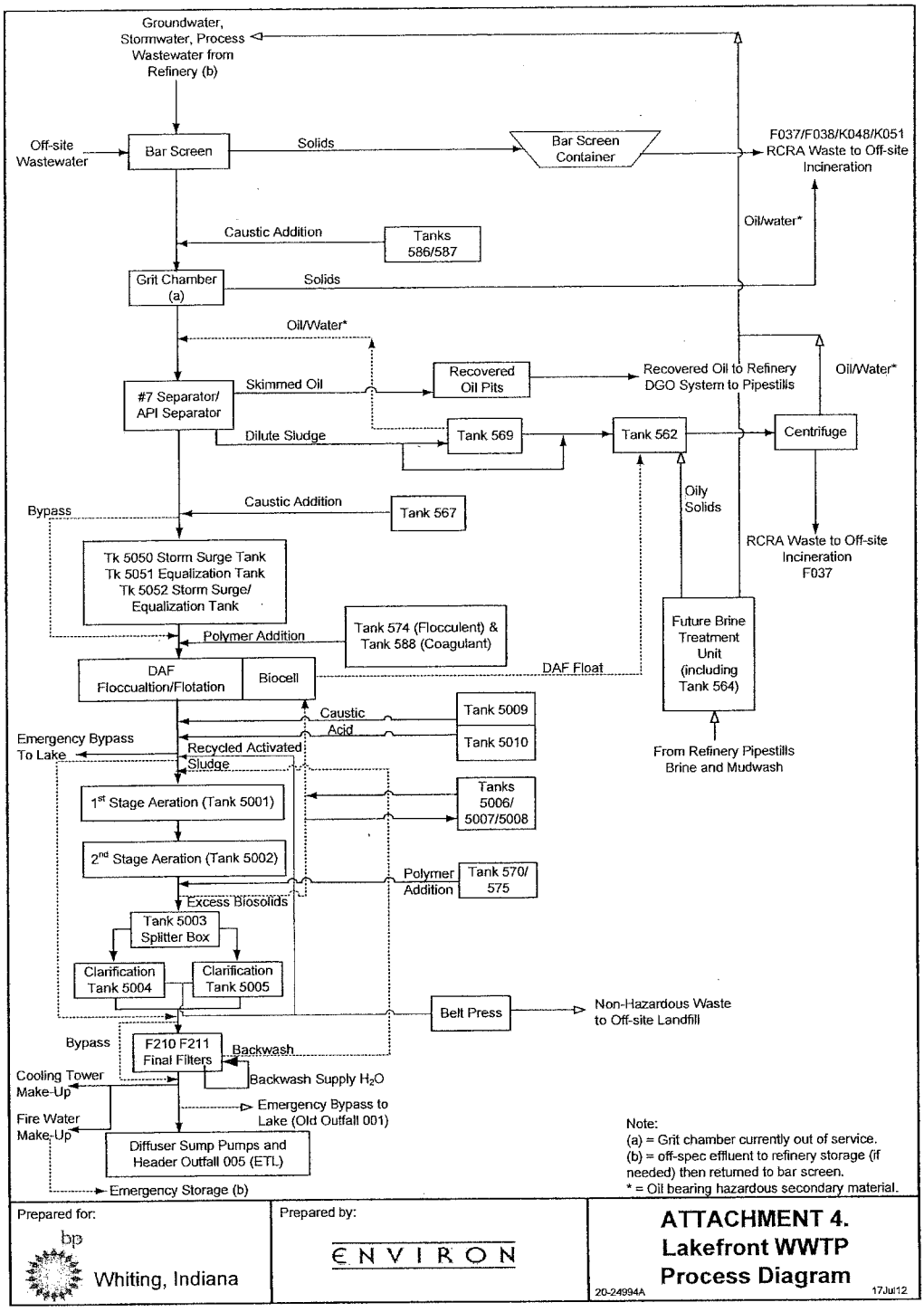


Figure 4: Lakefront WWTP Process Diagram



The permittee shall have the wastewater treatment facilities under the responsible charge of an operator certified by the Commissioner in a classification corresponding to the classification of the wastewater treatment plant as required by IC 13-18-11-11 and 327 IAC 5-22-5. In order to operate a wastewater treatment plant the operator shall have qualifications as established in 327 IAC 5-22-7. Based upon the information provided, IDEM has retained the permittee a Class D industrial wastewater treatment plant classification.

2.4 Changes in Operation

Refinery Process Units

New - #2 Coker: The existing coker (No. 11 B Pipe Still) will be shut down and replaced with a new coker (#2 Coker).

New - Enclosed Coke Handling System: The existing open coke yard will be shut down and replaced with a new enclosed coke handling system.

New - GOHT: A new Gas Oil Hydrotreating Unit (GOHT) will be installed to hydrotreat gas oil.

New - Cooling Towers: Two new cooling towers (Cooling Towers 7 & 8) will be installed to meet the cooling requirements for the WRMP.

New- Flares: Two new flare stacks will be installed in support of the WRMP.

Upgrade- No. 12 Pipestill: The existing No. 12 Pipestill (12PS) will be revamped to allow increased processing of heavy crude.

Upgrade - Sulfur Recovery Complex: Due to the higher sulfur content of the heavy crudes, additional lower sulfur fuels units will be installed.

Upgrade - Distillate Hydrotreating Unit: A new reactor and a new heater will be installed at the Distillate Hydrotreating Unit .

Upgrade - No. 11C Pipestill: Ultra-low NOx burners will be installed on the 11C PS Heater H-200 to reduce NOx emissions from this heater.

Upgrade - Aromatics Recovery Unit: Some minor modifications will be made at the ARU to process lighter feed.

Upgrade - No. 4 Ultraformer: Due to an increase in the naphtha feed rate to the existing 4UF, the front end reactor will be upgraded..

Upgrade - Existing Cooling Towers: High efficiency liquid drift eliminators will be installed on the existing Cooling Towers 2, 3, and 4 to reduce particulate emissions.

Upgrade - Distillate Desulfurization Unit: Some minor modifications will be made to the Distillate Desulfurization Unit (DDU).

Upgrade - Vapor Recovery Unit: Several modifications will be made to the VRU 300 to process a larger amount of lighter naphtha feed with the WRMP.

Upgrade- Fuel Gas System: As part of the WRMP, enhancements will be made to the refinery's fuel gas system to achieve a future potential total reduced sulfur (TRS) content.

Upgrade - Blending Oil Unit: Modifications will be made to the Blending Oil Unit heater.

Upgrade - Fluid Catalytic Cracking Unit 600: Several modifications will be made on the FCU 600 unit to accommodate an increase in throughput.

Upgrade - Propylene Concentration Unit: Modifications and additions will be made to the PCU to produce more RGP (refinery grade propylene) and minimize the production of PGP (polymer grade propylene).

Shutdowns - BP will permanently shut down and remove from service a number of units as a result of the installation of new units and the modification of certain existing units comprising WRMP. The following existing units will be permanently shut down as part of WRMP:

- No. 118 Coker Heaters H-101, 102, 103, and 104
- Existing Coke Handling System
- Beavon-Stretford Tail Gas Unit
- SBS Tail Gas Unit
- SBS Cooling Tower
- SRU Incinerator
- No. 12 PS Heaters H-2, H-1AS/1AN, H-1CN, H-18, H-1CX
- No. 4C Treating Plant
- No. 3 Ultraformer reformer section and heaters H-1, H-2 and F-7
- The 350 section of VRU 300
- No. 1 SPS Boilers

WWTP Units

New - Brine Treatment System: A new brine treatment system will be installed for treatment of the wastewater brine from the refinery's pipe still operations. The system is designed to separate the oily emulsified solids from the brine using new GLR micro-bubble technology. Chemistry is used to coagulate and flocculate the oil droplets to trap much of the solids into the oil phase. The GLR Gas Floatation Tanks (GFT) are designed to separate the oil (and consequently any solids entrained in the oil) and the water. The oil and solids that are created and separated by the brine treatment unit will be sent to the refinery solids handling system. The system will consist of four fixed-roof tanks to be located at the WWTP and two off-spec tanks which will be located in the refinery and equipped with external floating roofs.

New – Storm water/Equalization Tank: A new wastewater storage tank (TK-5052) with a capacity of 11,676,000 gallons and equipped with an external floating roof has been installed to provide additional storage volume for storm water surges and to provide additional equalization capacity. Extra surge capacity allows the WWTP to better respond to high storm water flows such as those experienced during heavy rain events.
The extra equalization capacity allows a better response to process upsets that may

temporarily increase the TSS or total nitrogen in the influent flow to the WWTP. The new tank TK-5052 is equipped with foam chambers, a guided wave radar level transmitter, an oil skimmer, an automatic sample collection system, and a jet mixing system to prevent solids accumulation. Start up was completed December 2009 with a corresponding notice sent to IDEM for additional WWTP equipment installation.

New - Final Filters: The existing final filters at the WWTP have been replaced with new final filters with a capacity of 32.1 MGD. The new Final Filters are of the gravity mono/multimedia type, with two clusters of four filter cells each, totaling eight filter cells. Influent flow is gravity fed from the clarifiers and splits equally between the two filter clusters. Flow to each of the cells within a cluster is distributed evenly by means of adjustable inlet weirs. Flow from the bottom of each cell is directed to a dedicated effluent chamber with adjustable weirs. The water flows over the adjustable weirs to a common transfer pit. Filtered water from the common transfer pit is tied into the existing 42" effluent piping, and will flow to the interceptor box, and out to the lake via Outfall 005. During backwash operation, seven of the eight total cells continue to operate normally, with one cell being placed in backwash mode.

New/Upgrade - Dissolved Air Flotation (DAF): Under the proposed USEPA Consent Decree, BP will be required to complete construction and installation of a new DAF or DNF to replace the existing DAF unit by Dec 31, 2015

2.5 Facility Storm Water

The storm water from the refinery is routed through the wastewater treatment plant and discharged through Outfall 005. A new wastewater storage tank (TK-5052) with a capacity of 11,676,000 gallons and equipped with an external floating roof has been installed to provide additional storage volume for storm water surges and to provide additional equalization capacity.

BP Whiting discharges storm water associated with industrial activity from an area on the South side of the BP Whiting property through Outfalls 003 and 004. The storm water is managed through the use of a Spill Prevention, Control and Countermeasure Plan, a storm water pollution prevention plan, a Facility Response Plan, and Agreed Order No. H-11187 which defined eight interim measures to be implemented at the J & L site in which Outfalls 003 and 004 are located.

3.0 PERMIT HISTORY

3.1 Compliance history

The following violations have occurred over the past two years:

Outfall 004

pH limit of 9.0 was exceeded in January, 2010

Outfall 005

CBOD lbs/day daily maximum lbs/day limit was exceeded in April, 2011
Oil & Grease daily maximum lbs/day limit was exceeded in April, 2011
Total Suspended Solids daily maximum lbs/day limit was exceeded in April, 2011
Phosphorus daily maximum mg/l limit was exceeded in November, 2011

Biomonitoring reports for the following months were conducted by BP and all of the tests passed: December, 2007; April, 2008; October, 2008; April, 2009; November, 2009; April, 2010; October, 2010; April, 2011; October, 2011 and April, 2012.
https://icis.epa.gov/icis/jsp/common/LoginBody.jsp

4.0 RECEIVING WATER

1. Receiving Waters:

Lake Michigan – Lake Michigan is the receiving water for outfalls 001, 002 and 005.

Lake George Branch of the Indiana Harbor Ship Canal – The Lake George Branch of the Indiana Harbor Ship Canal is the receiving water for Outfalls 003 and 004. The low flow condition of this stream is not relevant since the only discharge to this stream is generated by storm water.

2. Use Classification (327 IAC 2-1.5-19):

Lake Michigan – Lake Michigan is designated as an outstanding state resource water (OSRW) and shall be maintained and protected in its present high quality without degradation in accordance with 327 IAC 2-1.5-4(c). Lake Michigan is also designated for full-body contact recreation and capable of supporting a well-balanced warm water aquatic community. The Indiana portion of the open waters of Lake Michigan is designated as salmonid waters and shall be capable of supporting a salmonid fishery. Lake Michigan is protected by Indiana rules governing water quality standards for the Great Lakes Basin and as such, it is subject to the water quality standards specific to Great Lakes system dischargers as found in 327 IAC 2-1.5, 327 IAC 5-1.5, and 327 IAC 5-2 (see Great Lakes System Discharger Requirements, Section F of the Fact Sheet for more information).

Lake George Branch of the Indiana Harbor Ship Canal – The Lake George Branch of the Indiana Harbor Ship Canal is located within the Great Lakes Basin and is protected by Indiana rules governing water quality standards for the Great Lakes Basin and as such, it is subject to the water quality standards specific to Great Lakes system dischargers as found in 327 IAC 2-1.5, 327 IAC 5-1.5, and 327 IAC 5-2 (see Great Lakes System Discharger Requirements, Section F of the Fact Sheet for more information). The Lake George Branch of the Indiana Harbor Ship Canal is classified as a high quality water that is also a tributary to an OSRW.

3. Alternate Mixing Zone

Under 327 IAC 5-2-11.4(b)(2), except for a zone of initial dilution for acute aquatic criteria, wasteload allocations for discharges to the open waters of Lake Michigan shall be based on meeting water quality criteria in the undiluted discharge unless a mixing zone demonstration is conducted and approved by IDEM under 327 IAC 5-2-11.4(b)(4). If an alternate mixing zone is approved for a discharge to the open waters of Lake Michigan, wasteload allocations shall be based on meeting water quality criteria outside of the applicable alternate mixing zone. Under 327 IAC 5-2-11.4(b)(4)(C), an alternate mixing zone shall not be granted for a discharge into the open waters of Lake Michigan that exceeds the area where discharge-induced mixing occurs.

Prior to the issuance of the existing NPDES permit in 2007, BP Products submitted an alternate mixing zone demonstration in accordance with 327 IAC 5-2-11.4(b)(4) for a discharge through a submerged diffuser. The demonstration included a site specific study in which the ambient currents at the proposed diffuser location were measured over a 45 day period. Based on the information obtained as part of the site-specific study, BP Products modeled the discharge through the submerged diffuser for sixteen different current directions and the associated average current velocities. They used the U.S. EPA supported mixing zone model CORMIX to determine the dilution that occurs at the edge of the discharge-induced mixing zone.

After reviewing the mixing zone demonstration submitted by BP Products and conducting additional mixing zone modeling using CORMIX, a design case for the diffuser was chosen to calculate the dilution factor under critical conditions. At the effluent flow of 21.4 MGD, the diffuser will achieve a dilution factor of 37.1:1 at the edge of the discharge-induced mixing zone. The dilution factor is a weighted average that was calculated using the dilution obtained from the CORMIX model for each of the sixteen current directions and the frequency of occurrence of each current direction. The discharge-induced mixing zone extends a distance of 182 feet from the diffuser and its location will change as the current direction changes. The dilution factor was used in accordance with 327 IAC 5-2-11.4(c) to calculate wasteload allocations for all of the pollutants of concern except for Mercury. A mixing zone for Mercury has not been approved for the BP Products discharge to the open waters of Lake Michigan. The NPDES permit tracking system includes the latitude and longitude associated with each outfall number. Since the location of the discharge changed from the shore (Outfall 001) to the diffuser, the outfall number has to be changed to reflect the change in location. The discharge from the diffuser is designated as Outfall 005.

This alternate mixing zone was evaluated by the Biological Studies Section of the Office of Water Quality of IDEM in accordance with 327 IAC 5-2-11.4(b)(4) to ensure that the mixing zone does not:

1. Interfere with or block passage of fish or aquatic life,
2. Jeopardize the continued existence of an endangered or threatened species or result in the destruction or adverse modification of such species' habitats,
3. Extend to drinking water intakes,
4. Impair or otherwise interfere with the designated uses of the receiving water,
5. Promote undesirable aquatic life or result in a dominance of nuisance species,
6. Allow substances to settle to form objectionable deposits,
7. Allow floating debris, oil, scum, and other matter in concentrations that form nuisances,
8. Allow objectionable color, odor, taste or turbidity, or
9. Cause adverse effects to human health, aquatic life or wildlife.

Pursuant to 327 IAC 5-2-11.4(b)(6), the Commissioner has evaluated all available information, including information submitted by the public, relevant to the consideration of harm to human health, aquatic life, or wildlife, and has determined, based on IDEM's evaluation that is part of the agency record for this permit, that the alternate mixing zone will not cause any of the above-noted adverse impacts. Therefore, with the issuance of the existing NPDES permit, the Commissioner approved and granted the application of the alternate mixing zone in accordance with 327 IAC 5-2-11.4(b)(4). Further in accordance with IC 13-18-4-7, the Commissioner has determined that the applicant has demonstrated that the alternate mixing zone will not cause harm to human health or aquatic life.

BP has requested that the frequency of the biological survey of the aquatic life around the diffuser, given in Part I.H.2 of the existing permit, be reduced from annually to the first, third, and fifth year of the renewed permit. The frequency may be increased if findings suggest significant changes in monitored biological/chemical characteristics. Annual biological surveys were conducted under the terms of the existing permit in July 2009 (pre-diffuser), August 2010 (post-diffuser), and July 2011. The data have shown that there have been no significant changes (relative to historic lake conditions) to the biotic community from year to year. The reduced monitoring frequency will be sufficient to identify trends in biological community structure and composition in future years.

IDEM agrees that the conditions surrounding the diffuser have not changed significantly over the term of the existing permit and will grant the request to conduct the biological survey during the first, third and fifth year of the renewed permit.

4.1 Receiving Stream Water Quality

Section 303(d) of the Clean Water Act requires states to identify waters, through their Section 305(b) water quality assessments, that do not or are not expected to meet applicable water quality standards with federal technology based standards alone. States are also required to develop a priority ranking for these waters taking into account the severity of the pollution and the designated uses of the waters. Once this listing and ranking of impaired waters is completed, the states are required to develop Total Maximum Daily Loads (TMDLs) for these waters in order to achieve compliance with the water quality standards. A TMDL is the total amount of a pollutant that can be assimilated by the receiving water while still achieving water quality standards.

Indiana's 2010 303(d) List of Impaired Waters is developed in accordance with Indiana's Water Quality Assessment and 303(d) Listing Methodology for Waterbody Impairments and Total Maximum Daily Load Development for the 2010 Cycle. U.S. EPA under Section 303(d) of the Clean Water Act approved the Lake Michigan Shoreline TMDL report on September 1, 2004 for four impairments. TMDL reports identify and evaluate water quality problems in impaired water bodies and propose solutions to bring those waters into attainment with water quality standards.

The Lake Michigan Shoreline is on the 2010 303(d) list for E. coli., Mercury and PCBs. Mercury and PCBs are on the list due to fish consumption advisories for those substances.

http://www.in.gov/idem/nps/2348.htm
[link to water quality-limited database – 303d list]

http://www.in.gov/idem/nps/2652.htm
[link to TMDL web site]

5.0 PERMIT LIMITATIONS

Two categories of effluent limitations exist for NPDES permits: Technology-Based Effluent Limits (TBELs) and; Water Quality-Based Effluent Limits (WQBELs).

TBELs are developed by applying the National Effluent Limitation Guidelines (ELGs) established by USEPA for specific industrial categories TBELs are the primary mechanism of control and enforcement of water pollution under the Clean Water Act (CWA). Technology

based treatment requirements under section 301(b) of the CWA represent the minimum level of control/treatment using available technology that must be imposed in a section 402 permit [40 CFR 125.3(a)].

In the absence of ELGs, effluent limits can also be based upon Best Professional Judgment (BPJ). Accordingly, every individual member of a discharge class or category is required to operate their water pollution control technologies according to industry-wide standards and accepted engineering practices. This means that TBELs based upon a BPJ determination are applied at end-of-pipe and mixing zones are not allowed [40 CFR 125.3(a)]. Similarly, since the statutory deadlines best practicable technology (BPT), best available technology economically achievable (BAT) and best conventional control technology (BCT) have all passed; compliance schedules for these TBELs are also not allowed.

WQBELs are designed to be protective of the beneficial uses of the receiving water and are independent of the available treatment technology. The WQBELs for this facility are based on water quality criteria in 327 IAC 2-1.5-8 or under the procedures described in 327 IAC 2-1.5-11 through 327 IAC 2-1.5-16 and implementation procedures in 327 IAC 5. Limitations and/or monitoring are required for parameters identified by applications of the reasonable potential to exceed WQBEL in accordance with 327 IAC 5-2-11.5.

According to 40 CFR 122.44 and 327 IAC 5, NPDES permit limits are based on either TBELs, where applicable, BPJ, or WQBELs, whichever is most stringent. The decision to limit or monitor the parameters contained in this permit is based on information contained in the permittee's NPDES application. In addition, when performing a permit renewal, existing permit limits must be considered. These may be TBELs, WQBELs, or limits based on BPJ. When renewing a permit, the anti-backsliding provisions identified in 327 IAC 5-2-10(11) are taken into consideration.

- Narrative Water Quality Based Limits

  The narrative water quality contained under 327 IAC 2-1.5-8(b)(1) (A)-(E) have been included in this permit to ensure that the narrative water quality criteria are met.

- Numeric Water Quality Based Limits

  The numeric water quality criteria and values contained in this permit have been calculated using the tables of water quality criteria under 327 IAC 2-1.5-6(c) & (d).

5.1 Existing Permit Limits

Outfall 005 (formerly Outfall 001) with an Alternate Mixing Zone

DISCHARGE LIMITATIONS
TABLE I
Numeric Discharge Limitations, Sampling, and Monitoring Requirements

	Quantity or Loading			Quality or Concentration			Monitoring Requirements	
Parameter	Monthly Average	Daily Maximum	Units	Monthly Average	Daily Maximum	Units	Measurement Frequency	Sample Type
Flow	Report	Report	MGD	----	----	----	Daily	24-Hr. Total
$TBOD_5$	4,161	8,164	lbs/day	Report	Report	mg/l	1 x Weekly	24 Hr. Comp.
TSS	4,925	7,723	lbs/day	Report	Report	mg/l	2 x Weekly	24 Hr. Comp.
COD	30,323	58,427	lbs/day	Report	Report	mg/l	1 x Weekly	24 Hr. Comp.
Oil and Grease	1,368	2,600	lbs/day	Report	Report	mg/l	1 x Weekly	Grab
Phenolics (4AAP)	20.33	73.01	lbs/day	Report	Report	mg/l	1 x Weekly	24 Hr. Comp.
Ammonia as N	1,584	3,572	lbs/day	Report	Report	mg/l	5 x Weekly	24 Hr. Comp.
Sulfide	23.1	51.4	lbs/day	Report	Report	mg/l	1 x Weekly	24 Hr. Comp.
Total Chromium	23.9	68.53	lbs/day	Report	Report	mg/l	1 x Weekly	24-Hr. Comp.
Hex. Chromium	2.01	4.48	lbs/day	Report	Report	mg/l	1 x Weekly	Grab
Total Vanadium								
Interim	Report	Report	lbs/day	Report	Report	mg/l	1 x Monthly	24-Hr. Comp.
Final	50	100	lbs/day	0.28	0.56	mg/l	1 x Monthly	24-Hr. Comp.
Total Mercury								
Interim	Report	Report	lbs/day	Report	Report	ng/l	2 x Yearly	Grab
Final	0.00023	0.00057	lbs/day	1.3	3.2	ng/l	6 x Yearly	Grab
Total Phosphorus	Report	Report	lbs/day	Report	1.0	mg/l	1 x Weekly	24 Hr. Comp.
Whole Effluent Toxicity								
Chronic	-	-	-	Report	-	TUc	2 x Yearly	
pH	-	-	-	-	[1]	s.u.	3 x Weekly	Grab

Total Mercury Variance Effluent Limits Outfall 005

	Quality or Concentration			Monitoring	
Parameter	Annual Average	Daily Maximum	Units	Measurement Frequency	Sample Type
Total Mercury	23.1	Report	ng/l	6 x Yearly	Grab

Outfall 002

TABLE I
Numeric Discharge Limitations, Sampling, and Monitoring Requirements

Parameter	Quantity or Loading Monthly Average	Quantity or Loading Daily Maximum	Units	Quality or Concentration Monthly Average	Quality or Concentration Daily Maximum	Units	Monitoring Requirements Measurement Frequency	Monitoring Requirements Sample Type
Flow	Report	Report	MGD	----	----	----	Daily	24-Hr. Total
TOC (Intake)	-	-	-	Report	Report	mg/l	1 x Yearly	Grab
TOC (Discharge)	-	-	-	Report	Report	mg/l	1 x Yearly	Grab
TOC (Net)	-	-	-	Report	5.0	mg/l	1 x Yearly	Grab
Total Residual Chlorine	20.0	60.0	lbs/day	0.01	0.02	mg/l	1 x Weekly	Grab
Oil and Grease	-	-	-	Report	5.0	mg/l	1 x Monthly	Grab
Temperature								
Intake	-	-	-	Report	Report	BTU/Hour	5 x Weekly	Hourly
Discharge	-	-	-	Report	Report	BTU/Hour	5 x Weekly	Hourly
Net (daily average)	-	-	-	1.7×10^9	2×10^9	BTU/Hour	5 x Weekly	Hourly
pH	-	-	-	-	[1]	s.u.	3 x Weekly	Grab

Outfalls 003 and 004

TABLE I
Numeric Discharge Limitations, Sampling, and Monitoring Requirements

Parameter	Quantity or Loading Monthly Average	Quantity or Loading Daily Maximum	Units	Quality or Concentration Monthly Average	Quality or Concentration Daily Maximum	Units	Monitoring Requirements Measurement Frequency	Monitoring Requirements Sample Type
Flow	Report	Report	MGD	----	----	----	Daily	24-Hr. Total
TOC	-	-	-	Report	110	mg/l	1 x Weekly	Grab
Oil and Grease	-	-	-	Report	15	mg/l	1 x Weekly	Grab
pH	-	-	-	-	[1]	s.u.	1 x Weekly	Grab

5.2 Technology-Based Effluent Limits

The facility is designated as a major NPDES permitted facility with a SIC code of 2911-Petroleum Refining. The facility is subject to the Water Quality Based Effluent Limitations contained in 327 IAC 2 and 327 IAC 5, and it is subject to the Federal Effluent Guideline in 40 CFR 419. Therefore review and approval of the final permit by the US EPA Region 5 will be required.

According to 40 CFR 122.44 and 327 IAC 5, NPDES permit limits are based on either technology-based limitations, where applicable, best professional judgment (BPJ), or Indiana Water Quality-Based Effluent Limitations (WQBEL's), whichever is most stringent. The decision to limit or monitor the parameters contained in this permit is based on information contained in the permittee's NPDES application, the previous permit, and additional research conducted pursuant to the development of this permit.

- EPA Effluent Guidelines -- Existing Source Standards (BAT/BPT)

The U.S. EPA has established technology-based effluent guidelines for petroleum refining facilities. Since this facility is classified as an "existing point source", all discharges are subject to effluent guidelines identified in 40 CFR 419. The applicable effluent guidelines are as follows on the next three pages:

Outfall 005

Effluent Limitations based on the Federal Effluent Guidelines (40 CFR Part 419) for the CXHO Configuration

EPA Process Name	Process Rate 1000 Bbl/day	Weighting Factor	Process Rate/ Feedstock Rate	Unit Process Configuration Factor
Crude Processes				
Atmospheric Crude Distil.	420.0		1	
Crude Desalting	420.0		1	
Vacuum Crude Distillation	240.3		0.572	
Sum	1080.3	1	2.572	2.572
Cracking and Coking Processes				
Fluid Catalytic Cracking	172.0		0.410	
Delayed Coking	102.0		0.243	
Hydroprocessing	441.3		1.051	
Sum	715.3	6	1.703	10.219
Asphalt Processes				
Asphalt Production	33.9			
Sum	33.9	12	0.081	0.969
Reforming and Alkylation Processes				
Sulfuric Acid Alkylation	29.0			
Catalytic Reforming	70.0			
Sum	99.0			
feedstock rate (1,000 Bbl/day)		420.0	**Total**	13.76

Weighting Factor based on the table in 40 CFR 419.42(b)(3)

Size Factor:

Based on the table in 40 CFR 419.22(b)(1), 419.24(b)(1) = 1,000 BBL of Feedstock per stream day (150.0 or greater), Size Factor = 1.41

Based on the table in 40 CFR 419.22(b)(2), 419.24 (b)(2) = Process Configuration Factor 9.5 or Greater, Process Factor = 1.89
Effluent Limits based on 40 CFR 419.23(c)(1)(i)

Based on 40 CFR 419.23(c)(1)(i) using the CXHO Configuration

Pollutant	Processes Included	Daily Maximum (lbs./1,000 Bbl of Feedstock)	Monthly Average (lbs./1,000 Bbl of Feedstock)	Feedstock Rate (1,000 Bbl of Feedstock)	Effluent Daily Maximum (lbs/day)	Limits Monthly Average (lbs/day)
Phenolic Compounds	Crude	0.013	0.003	1.080.3	14.04	3.24
	Cracking & Coking	0.147	0.036	715.3	105.15	25.75
	Asphalt	0.079	0.019	33.9	2.68	0.64
	Reforming & Alkylation	0.132	0.032	99	13.07	3.17
	Total				134.94	32.8
Total Chromium	Crude	0.011	0.004	1.080.3	11.88	4.32
	Cracking & Coking	0.119	0.041	715.3	85.12	29.33
	Asphalt	0.064	0.022	33.9	2.17	0.75
	Reforming & Alkylation	0.107	0.037	99	10.59	3.66
	Total				109.77	38.06
Hexavalent Chromium	Crude	0.0007	0.0003	1.080.3	0.76	0.32
	Cracking & Coking	0.0076	0.0034	715.3	5.44	2.43
	Asphalt	0.0041	0.0019	33.9	0.14	0.06
	Reforming & Alkylation	0.0069	0.0031	99	0.68	0.31
	Total				7.01	3.13

Calculation of BPT, BAT and BCT Limitations using the CXHO Configuration

(a) Based on 40 CFR 419.22(a) and 419.24(a); (b) Based on 40 CFR 419.23(c)(1)(i)

Pollutant	Type of Effluent Limitation (a)	Daily Maximum Lbs/1,000 Bbl of Feedstock	Monthly Average Lbs/1,000 Bbl of Feedstock	Size Factor	Process Factor	Feedstock Rate 1,000 Bbl of Feedstock	Effluent Limitations BPT, BAT & BCT Daily Maximum Lbs/day	Effluent Limitations BPT, BAT & BCT Monthly Average Lbs/day	Other BAT Limits (b) Daily Maximum Lbs/day	Other BAT Limits (b) Monthly Average Lbs/day	Controlling Effluent Limitations Daily Maximum Lbs/day	Controlling Effluent Limitations Monthly Average Lbs/day
BOD5	BPT, BCT	**9.9**	5.5	**1.41**	1.89	420.0	11,080.65	6,155.92			11,081	6,156
TSS	BPT, BCT	**6.9**	4.4	**1.41**	1.89	420.0	7,722.88	4,924.74			7,723	4,925
COD	BPT, BAT	**74**	38.4	**1.41**	1.89	420.0	82,825.09	42,979.51			82,825	42,980
Oil and Grease	BPT, BCT	**3**	1.6	**1.41**	1.89	420.0	3,357.77	1,790.81			3,358	1,791
Phenolic Compounds	BPT	**0.074**	0.036	**1.41**	1.89	420.0	82.83	40.29	134.94	32.8	82.8	32.8
Ammonia as N	BPT, BAT	**6.6**	3	**1.41**	1.89	420.0	7,387.1	3,357.77			7,387	3,358
Sulfide	BPT, BAT	**0.065**	0.029	**1.41**	1.89	420.0	72.75	32.46			72.8	32.5
Total Chromium	BPT	**0.15**	0.088	**1.41**	1.89	420.0	167.89	98.49	109.77	38.06	109.8	38.1
Hex. Chromium	BPT	**0.012**	0.0056	**1.41**	1.89	420.0	13.43	6.27	7.01	3.13	7.01	3.13

5.3 Water Quality-Based Effluent Limits

The water quality-based effluent limitations for this facility are based on water quality criteria in 327 IAC 2-1.5-8 or under the procedures described in 327 IAC 2-1.5-11 through 327 IAC 2-1.5-16 and implementation procedures in 327 IAC 5.

- Oil and Grease
Oil and Grease limitations are based upon 327 IAC 5-5-2(h)(2) and are 15.0 mg/l Daily Maximum and 10.0 mg/l Monthly Average. Also, these limits are considered sufficient to ensure compliance with narrative water quality criteria in 327 IAC 2-1-6(a)(1)(C) that prohibits oil or other substances in amounts sufficient to produce color, visible sheen, odor, or other conditions in such a degree to create a nuisance.

-Flow
The permittee's flow is to be monitored in accordance with 327 IAC 5-2-13(a)2.

-pH
Limitations for pH in the proposed permit are taken from 327 IAC 2-1.5-8(c)(2).

WQBEL Rationale

The effluent was characterized by BP through sampling and analysis of their effluent and those data were provided to IDEM in the permit renewal application submitted on February 1, 2012 and through monthly discharge reports. On July 28, 2006, IDEM completed a wasteload allocation (7-28-2006 WLA) and evaluation of the reported effluent data to determine if the effluent contains pollutants at a level that has a reasonable potential to cause or contribute to an exceedance of the water quality criteria (RPE). The 7-28-2006 WLA was updated to include revised criteria for Vanadium based on new information provided by BP and to revise the design flow of the discharge to 19.9 MGD.

5.4 Whole Effluent Toxicity

The Indiana Water Quality Standards require that a discharge shall not cause acute toxicity, as measured by Whole Effluent Toxicity Tests (WETT), at any point in the water body and that a discharge shall not cause chronic toxicity, as measured by whole effluent toxicity tests, outside of the applicable mixing zone. Per Indiana Rule 327 IAC 5-2-11 .5(c)(2), the commissioner may include, in the NPDES permit, WETT requirements to generate the data needed to adequately characterized the toxicity of the effluent to aquatic life. Therefore, the permittee is required to conduct WETT to determine the toxicity of the water treatment additives and process wastestreams that may be used at this site.

There has been no failure of WET tests to indicate that there is a reasonable potential to exceed the calculated Acute and Chronic trigger values of 11 acute toxic units and 37 chronic toxic values. BP is being required to monitor their effluent for toxicity due to the source and nature of the discharge. Any discharge from a petroleum refinery has potential to cause toxicity and this monitoring program will ensure that the effluent from the BP Whiting Refinery will not become toxic to the point that it harms the environment. IDEMs whole effluent toxicity language always includes the trigger values in appropriate toxic units. Because of the diffuser

(which modifies the dilution ratio) both the acute and chonic values are affected. For chronic toxicity testing the acute toxicity levels are typically extrapolated from the chronic values.

This does not negate the necessity to submit Water Treatment Additive (WTA) approval worksheets for the additives proposed at this site.

5.5 Antibacksliding

None of the limits included in this permit conflict with anti-backsliding regulations found in 327 IAC 5-2-10(11), therefore, backsliding is applicable.

5.6 Antidegradation

In accordance with 327 IAC 2-1.3, the permittee is prohibited from undertaking any action that would result in the following:

a. A new or increased discharge of a bioaccumulative chemical of concern (BCC), other than mercury, shall be allowed that causes a significant lowering of water quality.

b. A new or increased discharge of mercury or a new or increased permit limit for a regulated pollutant that is not a BCC unless one of the following is completed prior to the commencement of the action:

(1) Information is submitted to the Commissioner demonstrating that the proposed new or increased discharges will not cause a significant lowering of water quality as defined under 327 IAC 2-1.3-2(50). Upon review of this information, the Commissioner may request additional information or may determine that the proposed increase is a significant lowering of water quality and require the permittee to do the following:

(i) Submit an antidegradation demonstration in accordance with 327 IAC 2-1.3-5; and

(ii) Implement or fund a water quality improvement project in the watershed of the OSRW that results in an overall improvement in water quality in the OSRW in accordance with 327 IAC 2-1.3-7.

(2) An antidegradation demonstration is submitted to and approved by the Commissioner in accordance with 327 IAC 2-1.3-5 and 327 IAC 2-1.3-6 and the permittee implements or funds a water quality improvement project in the watershed of the OSRW that results in an overall improvement in water quality in the OSRW in accordance with 327 IAC 2-1.3-7.

A review of information provided by BP Products was conducted to determine compliance with Indiana's Antidegradation Standards. Based on this review, the IDEM determined that the proposed discharges comply with the antidegradation standards found in 327 IAC 2-1.3 and an antidegradation demonstration is not required.

5.7 Stormwater

According to 40 CFR 122.26(b)(14)(ii), facilities classified as Standard Industrial Classifications 24 (except 2434), 26 (except 265 and 267), 28 (except 283), 29, 311, 32 (except 323), 33, 3441, 373 are considered to be engaging in 'industrial activity' for purposes of 40 CFR 122.26(b). Therefore the permittee is required to have all storm water discharges associated with industrial activity permitted. Treatment for storm water discharges associated with industrial activities is required to meet, at a minimum, best available technology economically achievable/best conventional pollutant control technology (BAT/BCT) requirements. The storm water discharges from the J&L and Lake George areas of the facility are controlled by numeric technology-based effluent limitations for Total Organic Carbon based on 419.23(f) and Oil and Grease based on IDEM Water Quality Standards (see Section 6.1).

Storm water associated with industrial activity must be assessed to determine compliance with all water quality standards. Effluent limitations, as defined in the CWA, are restrictions on quantities, rates, and concentrations of constituents which are discharged. Discharges in compliance with the numeric storm water effluent limits for outfalls 003 and 004 will meet the applicable water quality standards and will not cause a significant lowering of water quality. Therefore, the storm water discharge is in compliance with Antidegradation Standards and Implementation Procedures found in 327 IAC 2-1.3 and an Antidegradation Demonstration is not required.

Additionally, IDEM has determined that with the appropriate implementation of the required special conditions found in Part I.D. of the permit are necessary to meet the effluent limits for outfalls 003 and 004. This is consitent with 40 CFR 122.44(k)(4) regarding the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA.

The special conditions require the permittee to: (1) use good housekeeping practices to keep exposed areas clean, (2) regularly inspect, test, maintain and repair all industrial equipment and systems to avoid situations that may result in leaks, spills, and other releases of pollutants in stormwater discharges, (3) minimize the potential for leaks, spills and other releases that may be exposed to stormwater and develop plans for effective response to such spills if or when they occur, (4) stabilize exposed area and contain runoff using structural and/or non-structural control measures to minimize onsite erosion and sedimentation, and the resulting discharge of pollutants, (5) divert, infiltrate, reuse, contain or otherwise reduce stormwater runoff, to minimize pollutants in your discharges, (6) train all employees who work in areas where industrial materials or activities are exposed to stormwater, or who are responsible for implementing activities necessary to meet the conditions of this permit (e.g., inspectors, maintenance personnel), including all members of your Pollution Prevention Team, and (8) ensure that waste, garbage and floatable debris are not discharged to receiving waters by keeping exposed areas free of such materials or by intercepting them before they are discharged. These are essentially the same conditions that were in the 2007 permit.

To meet the numeric effluent limitations in Part I.A.3, the permit requires the permittee to implement the special conditions in Part I.D. If at any time the permittee, or IDEM, determines that the discharge causes or contributes to an exceedance of applicable water quality standards, the permittee must take corrective actions.